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ARMED FORCES DOCTRINE FOR CHEMICAL WARFARE AND BIOLOGICAL DEFENSE

Departments of the Army, the Navy, and the Air Force

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FIELD MANUAL
 No. 101-40
 NAVAL WARFARE PUBLICATION
 No. 36 (D)
 AIR FORCE REGULATION
 No. 355-5
 FLEET MARINE FORCE MANUAL
 No. 11-6

DEPARTMENTS OF THE ARMY,

THE NAVY, AND THE AIR FORCE

WASHINGTON, D.C., 30 June 1976

ARMED FORCES DOCTRINE FOR CHEMICAL WARFARE AND BIOLOGICAL DEFENSE

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CHAPTER 1

INTRODUCTION

1-1. Purpose and Scope

a. This manual establishes jointly agreed chemical warfare (CW) and biological defense (BD) doctrine for the US Army, Navy, Air Force and Marine Corps. It contains principles, policies, and concepts applicable to the employment of CW munitions/agents (i.e., lethal or incapacitating chemical agents) and to defense against enemy chemical and biological (CB) weapons. It also contains doctrine for use in planning for joint CW and biological defensive operations. (Smoke, flame, incendiary, riot control agents, and chemical herbicides are not considered to be chemical warfare agents and hence are excluded from this manual.)

b. The contents of this manual apply to—

- (1) General war.
- (2) Limited war.

c. This manual is in consonance with the international standardization agreement (STANAG) 2103, Reporting Nuclear Detonations, Radioactive Fallout, and Biological and Chemical Attacks.

1-2. Recommended Changes

Users of this manual should submit recommendations to improve its clarity, accuracy and utility. They should key comments to the specific page, paragraph and line of the text in which they recommend a change. Users should provide reasons for each comment to insure understanding and complete evaluation. Army users should forward comments on DA Form 2028 (Recommended Changes to Publications and Blank Forms) direct to Commandant, Command and General Staff College, ATTN: ATSW-DD, Fort Leavenworth, KS 66027. Army originators of proposed changes that would constitute a significant modification of approved doctrine should send an information copy, through command channels, to the Commander, TRADOC, Fort Monroe, VA 23651 to facilitate review and followup. Air Force users should forward comments to HQ, USAF/XOOSL, Washington, DC 20330 with information copy to HQ, USAF/XOD, Washington, DC 20330. Marine Corps users of this manual should submit comments to Commanding General, Marine Corps Development and Education Command (Director, Development

Center), Quantico, VA 22134. ATTN: OPNAV SSC Department of the Navy, Washington, DC 20350.

1-3. Responsibilities

a. *The Joint Chiefs of Staff.* The Joint Chiefs of Staff (JCS) issue directives to the Armed Forces prescribing principles and policies for the employment of CW munitions/agents and for defense against CB attack.

b. *The Services.*

(1) Each Service establishes its own requirements and determines the military characteristics of CW munitions/agents and CB defense items for its particular use.

(2) Within established programing, budgeting, and funding procedures, responsibility for the preparation of Research, Development, Test, and Evaluation (RDT&E) program proposals is as follows:

(a) Each Service is responsible for the CW munitions/agents and CB defensive items that meet its own specific requirements.

(b) The Department of the Army (DA) is responsible for the CW munitions/agents and CB defensive items that meet joint requirements of the Army and either the Navy or the Air Force, or both.

(3) The Army has primary responsibility for CW on land except for those functions otherwise assigned by JCS.

(4) The Navy is responsible for CW fire support in naval campaigns and amphibious and coastal operations.

(5) The Marine Corps is responsible for CW and BD operations related to its assigned functions, including defense against enemy CB weapons.

(6) The Air Force is responsible for air delivery of CW agents in support of aerospace operations conducted by Air Force elements and for providing, as required, air delivery of CW agents in support of the other Services.

(7) The Army manufactures, stores, and issues CW munitions/agents and CB defensive equipment. It manufactures chemical agents for all Services. The Army provides technical escorts and delivers munitions to theater entry points designated by Service

commanders. Subsequent intratheater technical escort in support of Service mission is provided by each of the Services as outlined in AR 740-32/OPNAVINST 8070.1B/AFR 136-4/MCO 4030.25B. The Army furnishes technical services and advice to other DOD agencies and Services in accordance with their stated requirements.

(8) The Navy, Marine Corps, and the Air Force are responsible for the procurement, production, and storage of CW munitions/system materiel peculiar to their operations except when the Army can provide this service more advantageously for the Government. In that case, the other Services provide funds for this support.

1-4. Policies

a. Authority for US forces to engage in chemical warfare emanates from The President. Subsequent to Presidential authorization, commanders receive directives relating to the employment of CW munitions through appropriate command channels. The pattern and objectives for the use of CW agents depends on US foreign policy, requirements of the military situation, allied participation, nature of the threat, and related factors.

b. Commanders insure that all US forces are trained, equipped, and supplied for CB defense in accordance with the appropriate directives of the individual Services.

1-5. Summary of Current US Policy

a. With respect to chemical warfare, the US—

(1) Renounces first use of lethal and incapacitating chemicals.

(2) Renounces the use of toxins as a method of warfare (no retaliation in kind).

(3) Confines military programs for toxins to research for defensive purposes only.

b. With respect to biological warfare, the US—

(1) Renounces the use of all methods of biological warfare (no retaliation in kind).

(2) Confines military programs for biological research to defensive measures, such as immunization, prophylaxis, therapy, and sanitation.

1-6. Explanation of Terms

Terms in this manual are used in accordance with JCS Pub 1.

CHAPTER 2

CHARACTERISTICS OF CHEMICAL AND BIOLOGICAL MUNITIONS/AGENTS

2-1. General

a. This chapter contains information on both chemical and biological munitions/agents characteristics. In view of US policy renouncing the use of biological agents in warfare, the information on biological operations is given only to provide a basic understanding of the necessity for and the techniques of biological defense (BD).

b. A common understanding of chemical and biological (CB) agent characteristics and employment concepts is basic to the consideration of chemical weapon employment, CB defense, and the logistics pertaining thereto. The behavior and characteristics of chemical agents are unique; therefore, plans for employment of and defense against, such agents require special attention.

c. Detailed information on material contained in this chapter is provided in the references listed in appendix B.

2-2. Characteristics of CB Agents

a. Effectiveness.

(1) Under the optimum meteorological conditions and against a force without protective equipment, the employment of chemical munitions/agents can produce a large number of casualties. Even with high standards of discipline, training, and equipment, a force may experience inefficiency because of the physiological and psychological stresses imposed by such things as heat and fatigue and may suffer some casualties. If the CB defense training and discipline are not at a high standard, the force may suffer numerous casualties.

(2) Civilian communities exposed to CB attack can expect substantially more casualties than a military force because civilians lack training in CB defense and have relatively little protective equipment.

b. *Area Coverage of CB Agents.* After delivery and release, the agent cloud normally diffuses into the atmosphere and is carried by the wind. This diffusion and downwind dispersion enable the agent to be effective beyond the point of release. This is particularly true of biological agents because of the smaller quantity required for an effective dose as compared to chemical agents. The effects of the traveling and expanding

cloud make CB agents particularly suitable for the attack of ill-defined targets and protected targets that cannot be attacked economically with conventional munitions.

c. *Choice of Characteristics.* Varying degrees of lethality, incapacitation, and persistency can be obtained by selection of CB agents. The most significant characteristics are—

(1) *Casualties.* Effects range from death to incapacitation through selection of agent.

(2) *Duration.* Agent effects may be of short or long duration, and the onset of effects may be immediate or delayed.

(3) *Contamination.* CB agents may be used to achieve residual contaminating effects capable of influencing military operations.

(4) *Selectivity.* CB agents have no major destructive effect on materiel or physical facilities and are useful when minimum damage of industrial, civilian, or military facilities is advantageous.

d. *Restrictions to Maneuver.* CB agents do not provide physical obstacles to maneuver. However, controlled use of chemical agents can provide a means of contaminating an area, thereby restricting maneuver by the threat of casualties. Personnel operating within a CB contaminated area either must wear appropriate protective equipment or risk becoming a casualty. When personnel wear protective equipment, their combat efficiency decreases significantly.

e. *Weather Influence.* Weather conditions influence the diffusion and travel of CB agents.

(1) *Wind.* Wind conditions affect the area coverage and the time required for the agent to reach the target. Wind shifts may divert the agent from the target area. Windspeed and wind shifts may disperse the agent over an extended area, thereby lessening agent concentration and effectiveness on the target. By releasing the agent upwind from the target, detection can be delayed and desired results are achieved with minimum warning.

(2) *Temperature gradient.* Temperature gradient is an expression of the difference between air temperature at ½ meter and 4 meters above ground. It is an indication of the stability of the air in the target area

and has a significant bearing on the use of CB agents. Under unstable conditions where turbulence is great, the CB agent clouds disperse rapidly in a vertical direction, thereby decreasing the effectiveness of the CB attack.

(3) *Humidity*. The amount of moisture in the air affects the decay rate of most aerosolized biological agents. High humidity increases the effectiveness of some chemical agents, but does not influence the effectiveness of others.

(4) *Sunlight*. Sunlight is destructive to biological agents, with the exception of insectborne (vector) disease germs. It also reduces the area coverage of agent aerosols.

f. Terrain. Terrain is an important consideration in planning the employment of CB agents, determining downwind hazard areas, and selecting the most effective munition and delivery system. Vegetation and soil conditions influence agent selection.

g. Personnel Safety. CW agents diffuse into the atmosphere and travel with the wind; therefore, the expanding agent cloud may present a hazard to friendly personnel located downwind of the point of release. The residual contamination hazard (existing from a few

hours to several days) produced by certain agents is another important consideration. It depends on the agent used, terrain, and climatic conditions. Chemical weapon systems, as will all weapon systems, have a probable delivery error that must be considered to prevent delivery on friendly personnel.

h. Prediction of Results. The method of dissemination, weather conditions, target characteristics, degree of warning, and status of protection and training of personnel (military and civilian) in the target area influence the effectiveness of CB agents. The accuracy of predicted results depends on the extent and accuracy of target information and meteorological predictions of conditions in the target area.

i. Immunity. Natural immunity or immunizations increase resistance to certain potential biological agents; however, massive dosage can override such immunity. With the exception of certain toxins, there is practically no known natural or induced immunity to the effects of chemical agents.

j. Agent Decay. Biological weapons contain living organisms that die at predictable rates under various environmental conditions; e.g., temperature, sunlight, and relative humidity.

CHAPTER 3

PRINCIPLES FOR PLANNING THE EMPLOYMENT OF CHEMICAL WARFARE MUNITIONS/AGENTS

3-1. General

a. Planning for employment of chemical warfare (CW) munitions/agents requires adherence to the same basic principles and procedures that apply to other weapons.

b. The commander and his staff must understand the capabilities and limitations in the use of CW munitions/agents. The control of their use, the impact of their employment, and their residual effects on the scheme of maneuver, organization for combat, disposition of forces, and combat support and combat service support requirements must be considered.

c. CW munitions/agents complement other weapon systems and provide an increased capability to accomplish military objectives. CW munitions/agents can be employed—

- (1) To engage forces on land and on sea.
- (2) To attack installations.
- (3) To hinder support of enemy operations by interdicting lines of communications.
- (4) To deny or hinder enemy use of land areas, facilities or material.
- (5) To canalize enemy movements.
- (6) To assist in protecting exposed flanks of friendly forces and in other barrier or denial operations.
- (7) To support ground, amphibious, and air-borne operations, raids, or clandestine missions.
- (8) To support defensive or retrograde operations.
- (9) To reduce the combat effectiveness of enemy forces by requiring them to wear protective equipment.

d. Combat support planning includes planning for the employment of CW munitions/agents. The use of CW munitions/agents may complement the use of conventional or nuclear weapons. The introduction of CW does not change the principles and procedures used in coordinating combat support. The coordination of this type of support with other combat support elements assumes increased importance because a wide variation of effects can be achieved. Communication systems normally used for support of ground,

air, and naval operations are suitable for coordinating CW combat support.

e. The planner must prepare plans early for the use of CW and must keep them current. The courses of action and planning factors vary depending on the limitations imposed on the use of CW munitions/agents, nuclear, and conventional weapons.

3-2. Planning Considerations

Plans for the employment of CW munitions/agents at all command echelons must include considerations of—

a. *National Policy* (para 1-4).

b. *Restrictions on Use*. Military considerations dictate restrictions on the use of these weapons, such as—

- (1) Type of agent that may be employed.
- (2) Type of targets that may be attacked.
- (3) Areas where CW munitions/agents may be employed.
- (4) Extent to which civilians may be exposed to agent effects.
- (5) Defensive capabilities of friendly forces.

c. *Relation to Mission*. The commander must consider CW munition/agent employment in relation to the accomplishment of the mission. He must weigh the benefits obtainable from using CW munitions/agents against those from other weapons in relation to the scheme of maneuver and the ability of friendly forces to exploit these benefits. In the planning stages, he must evaluate the impact of added requirements for coordination and control, plus the specialized requirements for protection of friendly forces, to insure that a decided advantage will result from their use.

d. *Impact on Future Operations*. Plans for CW munition/agent employment must include proper selection of weapons and agents to minimize interference with future operations. Two considerations are—

- (1) Contamination of CW agents may restrict the use of terrain for significant periods.

(2) Large numbers of enemy casualties could result and may require the commander to divert forces to provide care for those casualties.

e. Enemy CB Posture. Knowledge of enemy CB doctrine, employment capability, and defensive posture permits a better estimate of the enemy's vulnerability to attack and the scope of possible actions to retaliate. Strategic and/or tactical intelligence sources may provide information on the enemy CB doctrine and production capability and defensive posture. Such data as the availability to the enemy of protective masks, protective clothing and facilities, decontamination and processing facilities, CB munitions and delivery systems, and status of training of enemy troops may indicate enemy vulnerability to chemical attack.

f. Defensive Capabilities of Friendly Forces. Essential to CW planning is the consideration of the capability of friendly forces to protect themselves. Safety requirements will influence the selection of an agent, the choice of the delivery means, and the location and time of attack. Hazards created are generally downwind of the target area and usually result from a lack of information about surface wind direction or an unexpected shift in wind direction when the attack takes place. Commanders must take all appropriate measures to reduce the risk to friendly forces that may be endangered by the agents.

g. Command and Control Measures. Specific instructions must provide for initiating, controlling, and terminating employment of chemical weapons in retaliation and for coordinating with friendly forces that may be endangered by the effects.

h. Civil Affairs. Civil-military operations planners must consider the anticipated effect of CW operations on the civilian population, particularly the civil affairs (CA), medical, psychological, and political problems to be expected from employment of these munitions. Specific considerations in CA planning should include alerting and evacuating civilians in areas that may be affected, the status of health and sanitation among the civilian population, the stockpile of relief supplies available for distribution to the residents of the affected area, the effects on the economy and the government of the area, the degree of contamination of public facilities within the area, and the control required to prevent civilian interference with military operations.

i. CW Munitions/Agents Used in Conjunction With Other Weapons. Commanders may employ CW munitions/agents in conjunction with other weapons

to produce combined casualty effects greater than those attainable through the use of the same weapons separately. Chemical weapons provide a means for attacking personnel protected against the effects of conventional and nuclear munitions. CW munitions/agents complement nuclear and conventional munitions by—

(1) Offering the commander an attack capability without the destructive effects of nuclear and conventional munitions.

(2) Causing additional casualties by exploiting the confusion and lack of mask discipline that may exist in the fringe area of a nuclear burst.

(3) Neutralizing personnel in shelters that do not have collective protectors.

(4) Neutralizing ill-defined targets or dispersed forces.

(5) Denial operations and barriers.

(6) Permitting the commander to vary the degree of force applied from incapacitation to lethality.

(7) Requiring the enemy to assume a protective posture, thereby reducing his efficiency and mobility, and incurring additional casualties through physiological and psychological stresses.

j. Target Weather. Weather influences CW agent effects. Commanders must carefully consider the predicted surface meteorological conditions in the target area. Units employing CW munitions require continuing target weather information. Planners deal with weather variations by providing alternate CW attack plans varying with the agent, the munitions, the delivery systems, and the munition quantities used; the time of attack; or the location of munition impact. To provide safety to friendly forces, alternate CW plans may require a change in force dispositions, increased personnel protection, or a more accurate delivery system.

k. Postattack Analysis. A postattack analysis, required to exploit a CW attack, is more difficult to obtain than with other weapons. However, the sources of information for these analyses are essentially the same for any intelligence operation. FM 3-10/NWIP 36-2 AFM 355-4/FMFM11-3 contains details pertaining to postattack analysis.

l. Psychological Considerations. The use of CW munitions/agents will have a psychological effect on personnel in and outside the target area, whether military or civilian. If the situation dictates and circumstances permit, commanders should conduct

psychological operations before, during, and after the use of such munitions/agents.

3-3. Planning Guidance

a. Higher headquarters must provide CW planning guidance in the form of a policy letter or a letter of instructions, a standing operating procedure (SOP), an operation plan (OPLAN) or an operation order (OPORD), or a combination of these forms. As a minimum, this guidance will contain the—

- (1) Command policy concerning authorization and delegation of authority for employment.
- (2) System for controlling employment, including restraints and coordination with friendly forces.
- (3) Procedure for obtaining CW munitions/agents to support ground operations.
- (4) Intelligence estimate of enemy CB offensive and chemical defensive capabilities.
- (5) Provisions for combat service support.
- (6) Chemical protective measures to include decontamination policy/procedures.

b. The detail that a commander gives his staff in the CW planning guidance will vary with the level of command, the scope of operations, and the personal desires of the commander. Normally his guidance will contain, as a minimum, the—

(1) Degree of delegation of authority for employment of CW munitions/agents, after the initial release has been obtained from national command authorities.

(2) General purpose for use of CW munitions/agents and the concept of employment.

(3) Casualty levels desired.

(4) Chemical protective measures to include decontamination.

(5) Limiting requirements and restraints to include psychological effects.

3-4. Coordination

Because CW may increase the probability of interference with other operations, all elements must increase their coordination efforts both in initial planning and in executing the operation. The commander must correlate OPLAN's as far in advance as possible. These plans should include, as a minimum, the fire and movement plans of the ground, air, and naval commanders. The planner must closely coordinate the employment of CW agents with operations of adjacent friendly forces. He also must avoid contaminating terrain, airspace, or water that is essential to current and future operations. Contaminated areas must be marked and recorded. Units following the attacking forces must be informed of the extent and location of the contamination.



CHAPTER 4

CHEMICAL AND BIOLOGICAL DEFENSE*

4-1. General

Commanders must insure that their forces are trained, equipped, and supplied to defend themselves and to accomplish their assigned mission in a chemical and biological (CB) environment. When appropriate, the commander announces his estimate of the CB threat and the prescribed degree of CB defense preparedness that the force is to achieve. Operation plans (OPLAN), orders (OPORD), and standing operating procedures (SOP) must include provisions for CB defense.

4-2. Planning considerations

a. Intelligence of the enemy's capability to launch offensive CB operations is a continuing requirement. The enemy may secretly introduce CB agents into the area of operations. Intelligence of the enemy's CB defense capability is the most readily obtained indication of his capability to use CB weapons. Information that provides intelligence of a defensive capability includes immunization records, availability of protective masks, protective clothing, decontaminating and processing equipment, and the status of CB training of enemy personnel. A CB defense plan should set forth the commander's intelligence requirements including the proposed method of satisfying these requirements. Based on available intelligence, the commander then makes his estimate on the imminence of the CB threat and specifies the state of CB defense to be achieved. For varying degrees of specific support depending upon hardcore intelligence, see appendix A for further CB planning data.

b. Many weapon delivery systems available to a hostile country can deliver CB agents. Measures to detect and warn of the presence of enemy weapon systems and countermeasures against attack by these weapons normally are in effect regardless of the degree of threat of CB weapon attack. If an immediate threat of CB weapon employment exists, all attacks are considered potential CB attacks.

c. Detection of the presence of CB agents requires special equipment and training. Each service must

maintain a capability to detect these agents at the lowest practicable organizational level. The commander must insure warning of a CB attack as rapidly as possible because timely implementation of protective measures is essential to the survival of personnel and continued combat effectiveness. He must report a CB attack and the resulting contamination in accordance with appropriate service directives. Reporting procedures for nuclear and CB attacks and contamination are provided in the references listed in appendix B.

d. Each service must maintain protective equipment and supplies in a combat-ready state to permit continued mission performance with minimum reduction of efficiency.

e. The commander should immediately initiate procedures for decontamination of persons exposed to certain CW agents. He must emphasize the training of the individual in personal decontamination and first aid. He must limit large-scale decontamination to vital areas, equipment, and materiel. Aircraft and ships may require complete decontamination. As the tactical situation permits or dictates, such passive measures as avoiding contamination and waiting for weathering and decay to reduce or eliminate the hazard may be appropriate.

f. Medical defensive measures consist primarily of prophylaxis, therapy, and sanitation. Immunization available for some enemy-employed biological agents may be administered when biological attack appears imminent. Therapy reduces the incidence of lethality and the duration of incapacitation among CB casualties. SOP must cover both enemy attack and accidents in handling chemical weapons.

g. Planners must recognize that instituting CB defensive measures will diminish offensive operational capabilities to some degree. Before and during a CB attack, individual members of a force must take protective action. Because these actions influence, in varying degrees, the ability of each person to perform his assigned task, unit combat effectiveness is reduced. Realistic training and practice in the use of protective equipment minimize this reduction in combat effectiveness. Special CB defense materiel may encumber highly mobile units. To attain a maximum state of readiness at all levels, selected

*As applicable, the provisions of STANAG 2103 apply.

personnel may be diverted from their primary duties to perform CB defense duties. Because the effectiveness of CB defense depends initially on realistic training, the services must conduct frequent CB defense training in peacetime to achieve a capability for survival in wartime. All services must insure that training programs are adequate and practicable.

h. Planning for defense against CB attack must include considerations of many factors involving the civilian population. These factors include—

(1) The need to alert the civilian population to the imminence of enemy CB attack.

(2) The organization, state of training,

capabilities, and effectiveness of local civil defense agencies.

(3) Defense instruction and preparation.

(4) Possible evacuation requirements.

(5) Casualty-handling procedures.

(6) Decontamination needs.

(7) Requirements for additional food and water supplies.

(8) Problems of increased refugee movement.

Planners must consider the resultant psychological impact on the population in all these respects.

CHAPTER 5

CHEMICAL WARFARE AND BIOLOGICAL DEFENSE COMBAT SERVICE SUPPORT PLANNING

5-1. General

Combat service support for chemical warfare (CW) and biological defense (BD) follows normal planning procedures. Commanders must be aware of the impact of these operations on logistic support functions and must anticipate an additional load on the combat service support system.

5-2. Planning Considerations

a. Supply.

(1) Present CW munitions require special handling procedures and equipment. The nature of the agent in CW munitions requires separate storage of these munitions to simplify surveillance and to limit hazards from faulty or damaged munitions. Field filling of CW munitions requires special equipment to transfer the agent from the bulk shipping containers to the delivery munitions or systems. This operation requires specially trained personnel and strict safety and surety controls. Whenever possible, chemical munitions will be furnished to the user filled and preassembled to the maximum extent possible. The Services will return nonexpendable shipping containers used with chemical munitions to their supporting facilities. The disposal of contaminated, faulty or damaged munitions and supplies presents special support problems. With the advent of binary chemical munitions, many of the hazards associated with the storage and handling of chemical munitions will be eliminated.

(2) CW also increases the requirement for resupply or replacement of defensive equipment and material such as individual and unit protective equipment, detection and warning equipment, and decontamination equipment and supplies.

(3) Dispersion, cover, and employment of mobile supply points are techniques that reduce the vulnerability of supply operations.

b. Maintenance. Repair and maintenance of equipment and materiel contaminated by chemical agents presents greatly increased time requirements and may result in a significant increase in unusable equipment. When operations demand, decontamination of equipment will be performed by organizational personnel. However, operational efficiency is

decreased because of the necessary protective measures and the time required for decontamination. Decontamination will remain a major requirement and may well require decontamination teams to augment the maintenance force. The delay in repair caused by decontamination will cause higher than normal replacement demands on maintenance and supply systems.

c. Medical Evacuation and Hospitalization.

(1) *Planning.* Medical planners who develop hospitalization programs must consider the possibility of increased patient admission, variations in patient accumulation, need for greater dispersion, and requirement for specialized treatment facilities that result from enemy CB operations. These programs require provision of adequate reserve of medical supplies and equipment, the capability to relocate medical units rapidly, the ability to perform efficient triage (i.e., sorting and first aid treatment of battle casualties in collecting stations at the front before their evacuation to hospitals in the rear), and the capability to evacuate patients rapidly to supporting medical facilities. The consumption rate of medical supplies, including drugs and biologicals, will increase; some of these have a short shelf life or require special storage facilities. Command and control procedures must provide rapid response to sustained increases and recurring patient peakloads. Enemy CB operations can cause considerable casualties resulting in sizable patient loads in relatively short periods; therefore, medical planners emphasize the training of each individual in personal protective measures and first aid. By taking appropriate, immediate action to the effects of CB agents, military personnel measurably improve their chances for survival and lessen the patient workload of medical treatment facilities, see TM 8-285/NAVMED P-5041/AM 160-12.

(2) *Protection.* The capabilities of CB weapons are such that the effects may encompass medical installations, even though they are not a primary target. Therefore, the possibility for extensive enemy CB operations requires that medical planners provide collective protection for treatment facilities to safeguard patients and medical personnel from attack.

d. Transportation. CW munitions presently introduce special problems in the areas of safety, security, and handling. Some biological items used for defensive purposes, such as vaccines and antibiotics, require refrigeration during transportation. Any mode of transportation selected for specified hazardous-type shipments of CW munitions/agents and biological research agents requires an escort that includes qualified chemical technical personnel. It also requires prior coordination with the responsible transportation authorities. AR 740-32/OPNAVINST 80.70.1B/AFR 136-4/MCO 40.30.25B covers responsibilities for technical escort of these materials.

e. Personnel. Specialists must be made available to the commander to assist in CW and BD planning and to provide support for these operations. Personnel plans should provide rapid replacement of large numbers of casualties and for accelerated rotation of personnel or units whose efficiency has been reduced by prolonged operations in a toxic CB environment.

f. Labor. The work efficiency of all categories of the labor force; e.g., military, civilian, and prison-

ers, will be less in a contaminated area than in a noncontaminated area. The civilian labor force will be reluctant to work in contaminated areas or near potential target areas. Further, the Geneva Convention prohibits employing prisoners of war in contaminated areas unless the prisoners volunteer. Commanders can enhance the integrity of the labor force by providing protective equipment and training to any or all categories of labor.

g. Civil Affairs. CW and biological defensive operations substantially affect civil affairs activities. Requirements for CB defense, area damage control measures, and medical facilities for cities and towns increase. These requirements include—

- (1) Shelters and protective equipment.
- (2) Surveys to detect and mark contaminated areas.
- (3) Evacuation of vital facilities.
- (4) Distribution of food and medical supplies for disaster relief.
- (5) Prevention of disease.

APPENDIX A

CB DEFENSE PLANNING

A-1. Prior to and during a CB attack, protective action is taken by individual members of a force. Individual protective actions will affect in varying degrees the ability of each person to perform his assigned task. Because of the diverse tasks and equipment items of units, unit capabilities are subject to varying degrees of reduction of combat effectiveness by the adoption of CB defense measures. This reduction in combat effectiveness is minimized by practical training and by use of protective equipment. Highly mobile units may be encumbered by special CB defense materiel. To attain a maximum state of readiness at all levels, selected personnel may be diverted from their assigned duties to perform CB defense duties.

A-2. The CB defense plan sets forth the commander's CB intelligence requirements including the proposed method of satisfying these requirements. Based upon available intelligence, the commander makes his estimate of the imminence of the threat of CB weapons use. The state of CB defense readiness to be achieved is then specified.

A-3. The following guidance is provided to assist the commander in determining items and quantities of protective equipment and types of support units to be included in an operation.

(a) When available intelligence clearly indicates that the use of toxic chemical agents is probable, individual protective equipment is issued to all troops and permeable protective clothing is worn. Decontamination materials are held in forward depots or phased in as early supply shipments; decontamination and processing facilities are phased in early in the operation. Chemical depot and maintenance support are phased in as early as the situation will permit.

(b) When available intelligence clearly indicates a lack of capability of the enemy to use toxic chemical agents, individual protective equipment and clothing impregnation sets will be held in unit supply installations or in forward depots. Impregnated clothing need not be worn. Collective protection equipment and decontamination materials are held in base depots, and chemical decontamination and processing facilities are phased in late in the operation.

(c) Where only limited intelligence is available concerning the enemy's capability and probable courses of action in the use of toxic chemical agents, the units and the chemical protective equipment to be included in operations are determined by a careful consideration of the available intelligence, the likelihood of quick changes in the enemy situation, and the accessibility of friendly rear bases or depots.

(1) In amphibious or airborne operations from distant bases, individual protective equipment, clothing impregnation sets, and moderate amounts of decontamination materials accompany the troops; decontamination and processing facilities are phased in as early as practicable. When the operation has progressed to such an extent that the target presented by the concentration of troops has passed, and further CB intelligence has not been developed, individual protective equipment is turned in to appropriate unit supply.

(2) In amphibious or airborne operations from relatively near bases, individual protective equipment accompanies the troops; all other types of protective equipment and chemical decontaminating and processing facilities remain at the rear bases ready for movement forward when required.

(3) In operations on a large land mass, individual protective equipment may be kept in appropriate unit supply, collective protection equipment and decontamination materials are held in the communications zone base area.

(d) When intelligence information indicates that the enemy has the capability to employ only irritant agents, personnel will be equipped with minimum required individual protective equipment.

A-4. The decision as to the state of CB defense readiness, together with provisions for changing it as required, is translated into action through appropriate portions of plans and orders which provide for the following:

(a) CB attack warning.

(1) Attack by delivery system capable of carrying CB munitions.

(2) Detection of the presence of CB agents.

(3) Communications for attack warning.

(b) Assignment of tasks related to CB defense readiness.

- (c) Resupply of CB material consumed.
- (d) Coordinating instructions.
 - (1) Agent detection reporting.
 - (2) Mutual CB defense aid by units.
 - (3) Authority and controls for establishing CB defense conditions.
 - (4) Procedures to be followed upon accidental release of CB agents.
- (e) Decontamination policies.

A-5. Provisions for CB defense must be included in operational plans and orders. Because formats for such plans/orders vary widely among the Services, no format for CB defense is provided.

A-6. The effectiveness of CB defense depends initially upon training. Continual CB defense training is conducted in peacetime to achieve a realistic capability for survival in CB operations in wartime. All Services must insure that training programs are adequate and practical.

APPENDIX B REFERENCES

B-1. Army Regulations (AR)

AR 11-17
AR 200-58

AR 310-25
AR 633-50

AR 740-32/OPNAV INST 8070.1B/
AFR 136-4/MCO 4030.25B

Chemical Surety Program.
Organization and Training for Chemical, Biological, and Radiological (CBR) Defense.
Dictionary of United States Army Terms (Short Title: AD).
Prisoners of War: Administration, Employment, and Compensation.
Responsibilities for Technical Escorts of Dangerous Materials.

B-2. Field Manuals (FM)

FM 3-1
FM 3-2
FM 3-3
FM 3-8
FM 3-10B
FM 3-12
FM 8-10
FM 21-40
FM 21-41

FM 21-48

FM 27-10
FM 33-1
FM 33-5
FM 41-5
FM 41-10
FM 101-5
FM 101-10-1

Chemical, Biological, and Radiological (CBR) Support.
Tactical Employment of Riot Control Agent CS.
Tactical Employment of Herbicides.
Chemical Reference Handbook.
Employment of Chemical Agents.
Operational Aspects of Radiological Defense.
Medical Support, Theater of Operations.
Chemical, Biological, Radiological, and Nuclear Defense.
Soldier's Handbook for Defense Against Chemical and Biological Operations and Nuclear Warfare.
Planning and Conducting Chemical, Biological, and Radiological (CBR) and Nuclear Defense Training Exercises.
The Law of Land Warfare.
Psychological Operations—US Army Doctrine.
Psychological Operations—Techniques and Procedures.
Joint Manual for Civil Affairs.
Civil Affairs Operations.
Staff Officers' Field Manual: Staff Organization and Procedure.
Staff Officers' Field Manual: Organization, Technical, and Logistical Data; Unclassified Data.

B-3. Joint Chiefs of Staff (JCS) Publications

1
2 (FOUO)
3 (C)

Dictionary of Military and Associated Terms.
Unified Action Armed Forces (UNAAF).
Joint Logistics and Personnel Policy and Guidance (U).

B-4. Standardization Agreement (STANAG)

2103

Reporting Nuclear Detonations, Radioactive Fallout, and Biological and Chemical Attacks.

B-5. Technical Manuals (TM)

TM 3-216/AFM 355-6
TM 3-220
TM 3-240

Technical Aspects of Biological Defense.
Chemical, Biological, and Radiological (CBR) Decontamination.
Field Behavior of Chemical, Biological, & Radiological Agents.

FM 101-40
NWP 36(D)
AFR 355-5
FMFM 11-6

TM 3-250

TM 8-285/AFM 160-12

TM 9-1325-200

TM 10-277

B-6. Other Publications

Air Force Manual 355-1

Air Force Pamphlet 355-1

Marine Corps Order 3340.3

SECNAV INST S5430.8

OPNAVINST S5430.23

NAVFAC Instructions 3440.12

NAVFAC Publication P-436

NWIP 50-3

NAVSHIPS Technical Manual
Chapter 9770

Storage, Shipment, Handling, and Disposal of Chemical
Agents and Hazardous Chemicals.

✓ Treatment of Chemical Agent Casualties.

Bombs and Bomb Components.

Protective Clothing Chemical Operations.

Disaster Preparedness Planning and Operations.

Fundamentals of Disaster Preparedness.

Employment of Marine Air-Ground Task Forces in Future
Amphibious Operations.

Navy CW/BR Program.

Assignment of Biological and Chemical (BC) Warfare Respon-
sibilities within CNO.

Navy Disaster Control Guidance.

NBC Warfare Defense Ashore.

Shipboard Damage Control.

Shipboard BW/CW Defense and Counter measures.

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